STATE OF MONTANA
JOB DESCRIPTION

Montana state government is an equal opportunity employer. The State shall, upon request, provide reasonable accommodations to otherwise qualified individuals with disabilities.

Job Title: MDT Survey Systems Manager

Position Number: 35012

Location: Helena

Department: Transportation

Division and Bureau: Highways & Engineering Division/Highways Bureau

Section and Unit: Photogrammetry & Survey Section/Survey Unit

Job Overview:

Control, cadastral and engineering surveys play an integral role in preconstruction program delivery and project construction. Providing survey information quickly, efficiently, accurately and in formats usable by internal and external customers is critical. Automated and integrated surveying systems are a vital link to collecting, processing and delivering survey information.

This position is responsible for the planning, procurement, development, operation, maintenance and ongoing management of MDT's customized survey systems, software and equipment. The position serves as MDTs resident expert on MDT survey systems and practices and ensures consistency in the use of these systems through development of policy, procedures and QA/QC processes. This position also identifies training needs, oversees department wide automated survey training efforts and directs technical support efforts related to survey systems software and hardware.

The position is located in the Highways Bureau - Photogrammetry & Survey Section - Survey Unit and reports to the MDT Land Survey Manager (#35004). This position provides technical oversight, professional guidance and program direction related to automated survey systems to both Helena headquarter and District survey and construction staff.

Essential Functions (Major Duties or Responsibilities):

A. <u>Survey Systems Research, Analysis and Planning</u> 45%

Researches and analyzes survey industry trends and technology advances that have potential to improve MDT survey safety and proficiencies. Conducts studies to identify benefits, costs and challenges associated with each new technology. Devises conceptual ideas for implementation and use of new survey technologies. Serves as MDTs contact

and expert resource for research, analysis, use, management and maintenance of survey systems, software and equipment.

1. Researches new and upgraded survey system software and equipment technologies for potential purchase and integration into MDT's existing survey system. Performs analysis of new and upgraded technologies to quantify potential survey safety and efficiency improvements, to determine suitability in meeting Engineering Division objectives and to ensure these technologies will integrate/interface with existing MDT systems.
2. Performs value analysis of potential new and upgraded systems, software and equipment to evaluate performance and cost effectiveness of comparable technologies and vendors. Evaluates and projects expected costs and benefits of potential new and upgraded survey systems software and equipment.
3. Performs lifecycle replacement and operational cost studies of survey systems software and equipment. Evaluates and determines necessity and expected advantages of replacement and upgraded survey systems software and equipment based on lifecycle costs and forecasting of future demands by other MDT systems, Engineering Division objectives and schedule requirements.
4. Directs development of a business analysis outlining the need to purchase, projected costs, potential benefits, and future resource requirements to purchase, implement, operate and maintain each new or upgraded survey system.
5. Participates in long-term Engineering Division and other survey system planning activities. Provides specialized guidance, analysis and knowledge regarding survey practices, procedures, systems, software and equipment for survey system and Engineering Division long-term planning activities.

B. <u>Survey Systems Development, Implementation, Operations and Maintenance</u> 30%

Manages MDT survey systems through procurement, testing, development, implementation, operation and maintenance of new and upgraded survey system software and equipment. Provides integration and ensures current, upgraded and new survey systems, software and hardware interface with other MDT systems, software and hardware. Ensures compliance with applicable laws, regulations, procedures and policies.

1. Researches and understands MDT Engineering Division, ISD Division and Department of Administration Information Services processes, procedures, policies and regulations. Analyzes and identifies non-survey system, software and hardware that need to interface with survey systems, software and hardware and the integration and interface conditions that are necessary for compliance with applicable policies, regulations and MDT Engineering Division objectives.
2. Researches and analyzes Engineering and ISD Divisions systems, software and hardware to ensure interface with survey systems, software and hardware. Oversees and develops solutions that provide and maintain survey integration and interface with other units and divisions.
3. Coordinates, manages and procures new, upgraded and replacement survey systems, software and equipment. Researches pricing, warranty, licensing and maintenance terms for purchase contracts. Coordinates and communicates with MDT purchasing and accounting, consultants and vendors.
4. Develops testing, configuration and implementation plans for survey systems, software and equipment acquisitions and upgrades.
5. Manages and oversees ongoing operations of survey systems.

6. Provides expert knowledge and develops custom solutions to survey systems addressing integration, interface, maintenance and operational problems and issues.
7. Troubleshoots survey systems, software and hardware issues and problems.
8. Coordinates and communicates matters regarding survey systems, software and hardware integration and interface with MDT staff and management, consultants and vendors. This involves coordinating and participating as a team member with other MDT, consultant and vendor technical resources to develop solutions to technical survey equipment, software and systems integration and interface issues and, communicating technical matters to managers. Serves as the Survey Unit contact and technical resource for survey systems, software and equipment integration and interface matters.
9. Coordinates with District staff for program delivery priorities and available resources and schedule and assign survey equipment accordingly. Oversees inventory tracking of survey equipment.

C. <u>Best Practices, Procedures and Policy Evaluation and Management</u> 10%

Performs various duties to ensure MDT survey practices, procedures and policies meet current and future Engineering Division objectives and industry standards.

1. Understands, reviews and analyzes MDT survey procedures and policies for effective and efficient performance in accordance with Engineering Division objectives.
2. Researches and analyzes industry and other state transportation agencies survey standards and procedures.
3. Drafts recommendations for MDT survey procedures and policies that provide for improved efficiency and effectiveness in accordance with MDT Engineering Division objectives and industry standards.
4. Oversees and/or directs development and implementation of survey systems QA/QC program and procedures. Ensures the QA/QC program provides delivery of timely, accurate and effective survey data in a changing or static Engineering Division and/or industry environment.
5. Coordinates and communicates with survey staff, construction staff and management regarding the effectiveness of current and proposed changed survey procedures and policies.
6. Serves as MDT's contact and information resource for coordination and communication with other State DOTs, industry experts and vendors to research and share practices and procedures that meet current and future MDT objectives, industry standards and improve survey effectiveness and efficiency.

D. <u>Training, Technical Assistance and Survey System Maintenance</u> 10%

Directs and oversees automated survey systems software and equipment training and technical support systems for users. Provides technical expertise and resources for problem resolution and system operation.

1. Identifies user training proficiency and training needs. Reviews and tracks common errors and monitor systems output for inconsistencies. Coordinates with District and Helena Construction Bureau staff to identify and target training needs.

2. Researches and develops systems, software and equipment training programs for MDT, contractor and consultant users. Provides training to Helena Survey Unit staff and District survey trainers.
3. Coordinates and provides District support for selection of District trainers. Schedules, oversees and manages District staff training performed by District trainers.
4. Develops, maintains and updates help guides and technical help resources for survey systems, software and equipment users.
5. Serves as MDTs contact and expert for matters concerning research, testing, implementation, operation, maintenance, training and troubleshooting survey systems, software and equipment.
6. Coordinates with Highways, Consultant Design and Construction Bureaus for additional training to MDT staff, consultants and contractors as directed.
7. Directs ongoing updates, maintenance and repairs of survey system software and equipment. Manages maintenance, warranty, repair and licensing contracts. Coordinates and communicates with systems, software and equipment users, vendors and consultants for maintenance and contract work.

E. <u>Other Duties Assigned</u> **5%**

Performs a variety of other survey, coordination and management duties as assigned by the Land Survey Manager, Photogrammetry & Survey Section Supervisor, Highways Design Engineer and Highways Engineer in support of Engineering Division objectives. Coordinates and communicates with Construction, Highways, Research, Consultant Design, Engineering Information Services Bureaus staff, Information Services and Administration Divisions, contractors, vendors, consultants, other States DOT, and professional survey organizations and experts. Manages and participates in special projects, attends training and attends organizational conferences and schedules, directs and partakes in meetings and committees as designated.

1. Performs and manages storage and retention of survey records. Serves as point of contact and resource for questions regarding retained survey records.
2. Schedules and directs meetings to discuss survey systems software and equipment procedures, policies, training and reports.
3. Participates in committees as assigned and serves as survey systems and equipment technical expert.
4. Researches appropriate technical training, seminars and conferences relevant to advancing knowledge and expertise of the essential functions. Coordinates training with management and participate as directed.
5. Performs other duties as assigned.

Supervision:

This position manages work completed by other MDT staff including MDT Construction staff, MDT Survey staff, contract consultants and vendors but is not an in-line supervisor.

The number of employees supervised is: 0

The position number for each supervised employee is: N/A

Physical and Environmental Demands:

- Extensive statewide travel (travel is estimated to range from 10% to 30% of the time)
- Lifting objects in excess of 30 lbs.
- Ability to walk over uneven terrain or in water
- Operating a personal computer
- Communicating verbally and in writing
- Continual walking or standing
- Exposure to extreme weather conditions and high-speed traffic
- Operation of motor vehicles
- Operation of survey and related equipment
- Dealing with the public on a regular basis

Knowledge, Skills and Abilities (Behaviors):

Essential functions of this position require:

- a thorough professional knowledge of the concepts, principles, and developmental applications of land surveying and related mathematics (e.g., geometry, trigonometry, statistics, etc.)
- a thorough knowledge of survey systems, survey system development and the integration of different types of survey systems
- an advanced knowledge in legal principles, guidelines, and precedents related to surveying (e.g., Montana Subdivision and Platting Act, Sanitation in Subdivisions Act, Uniform Standards for Monumentation, etc.); case law related to property boundaries; survey computation and data analysis; State and federal survey policy and procedures; and specialized applications of various instrumentation
- knowledge and experience with design, construction and survey software such as MicroStation, GeoPak, Open Roads, TDS Survey Pro, Microsoft Office, Trimble Business Center, Trimble Access, etc.
- a working knowledge of civil engineering principles along with ability to develop a working knowledge of MDT engineering standards and specifications, project development, highway construction related to survey, training techniques and methodologies, computers, computer programming, MDT survey sytem interrelationships with other MDT systems
- interpersonal skills and behaviors
- ability to creatively develop solutions to complex and unique problems in an independent and a team environment
- flexibility and adaptability to handle changing priorities and conditions
- skill in directing, organizing, and coordinating multiple staff and complex projects; examining, interpreting, and translating technical information to broad audiences; and use of standard office software applications (e.g., word processing, database, etc.)
- skill in the use of specialized surveying equipment such as electronic total stations, digital levels, data collectors, CADD workstations, automated systems, GPS survey equipment, and misc. other tools and technologies

Minimum Qualifications (Education and Experience):

Desired: Bachelor's degree in land surveying, geomatics or related field AND six years experience, two of which must be progressively responsible professional land survey experience including experience with full project oversight.

Alternate: Associates degree in land surveying, geomatics or related field AND eight years experience, two of which must be progressively responsible professional land survey experience including experience with full project oversight.

Note: Related degree must include significant coursework in survey related maths, drafting and surveying techniques, principles and practices.

Note: A master's degree in surveying or geomatics may substitiute for two years of professional land survey experience.

Special Requirements:
List any other special required information for this position

☐	Fingerprint check
☐	Background check
☒	Valid driver's license
☒	Other: **Montana Professional Land Surveyor License**
MPEA	Union Code
	Safety Responsibilities

The specific statements shown in each section of this description are not intended to be all inclusive. They represent typical elements and criteria considered necessary to perform the job successfully.

Signatures

My signature below indicates the statements in the job description are accurate and complete.

	Supervisor Photogrammetry & Survey	Feb. 13, 2017
Immediate Supervisor	**Title**	**Date**

Administrative Review	**Title**	**Date**

My signature below indicates that I have read this job description.

Employee	**Title**	**Date**

Human Resources Review

Job Code Title: Surveyor Job Code Number: 171256
Pay Band: 6

My signature below indicates that Human Resources has reviewed this job description for completeness and has made the following determinations:

☐ FLSA Exempt ☒
FLSA Non-Exempt

☐ Telework Available ☐
Telework Not Available

☒ Classification Complete ☐
Organizational Chart attached

Human Resources:

Signature **Title** **Date**